

**WHAT IS CLAIMED IS:**

1. An apparatus for generating a three-dimensional data set, comprising:

an acquiring portion for acquiring a first original data set and a second original data set, the first original data set and the second original data set respectively representing first and second original images, each of the first and second original images being obtained by imaging a same object from differing observation points;

a resolution multiplication unit for converting the first original data set and the second original data set to a first low resolution data set and a second low resolution data set, respectively; and

a three-dimensional generating portion for generating a three-dimensional data set using the first original data set and the second original data set and the first low resolution data set and the second low resolution data set;

wherein the three-dimensional data set comprises a first part and a second part, the first part is generated using the first original data set and the second original data set, and the second part is generated using the first low resolution data set and the second low resolution data set.

2. The apparatus of claim 1, further comprising:

an extracting portion for extracting a first partial image from the first original image; and

a seeking portion for seeking points corresponding to points in the first partial image within the second original image;

wherein the first part of the three-dimensional data set is generated by the sought corresponding points.

3. The apparatus of claim 1, wherein the three-dimensional generating portion includes:

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a three-dimensional reconstruction portion for producing three-dimensional position data using the first low resolution data set and the second low resolution data set; and

a standard model fitting portion for fitting a standard model to the produced three-dimensional position data to generate the three-dimensional data set.

4. The apparatus of claim 3, further comprising:

an extracting portion for projecting high-precision areas of the standard model onto the first original image and extracting the projected areas as a first partial image; and

a seeking portion for seeking points corresponding to points in the first partial image within the second original image;

wherein the first part of the three-dimensional data set is generated by the sought corresponding points.

5. The apparatus of claim 1, further comprising:

an extracting portion for extracting high precision areas from the first original data set;

wherein the first part of the three-dimensional data set comprises the extracted high precision areas.

6. A three-dimensional data generating device, comprising:

a device for inputting multiple images having a first resolution from different viewpoints of an object;

a converter for performing a resolution conversion of each of the input multiple images to generate converted images having a second resolution that is different than the first resolution;

a characteristic area extraction unit for detecting characteristic areas of the object from at least one of the input multiple images; and

a three-dimensional construction unit for constructing three-dimensional data by using data from the input images for the characteristic areas of the object and by using data from the converted images for remaining areas of the object.

7. The three-dimensional data generating device of claim 6, further comprising:
  - a first memory for storing the input multiple images; and
  - a second memory for storing the converted images.
8. The three-dimensional data generating device of claim 6, wherein the first resolution is higher than the second resolution.
9. The three-dimensional data generating device of claim 6, wherein the data used by the construction unit is combined and stored.
10. The three-dimensional data generating device of claim 6, wherein the data used by the constructing unit is stored separately.
11. A three-dimensional data generating device, comprising:
  - a device for inputting multiple images that include multiple images obtained from different viewpoints of an object and having different resolutions;
  - a characteristic area extraction unit for selecting specific areas from at least one image; and
  - a three-dimensional construction unit for reconstructing three-dimensional data by using, from among said multiple images having different resolutions, high-resolution images for the selected areas, and low-resolution

images for the non-selected areas, and by seeking correspondence between the images obtained from different viewpoints.

12. A three-dimensional data generating device, comprising:

a device for inputting multiple images obtained from different viewpoints;

a converter for performing resolution conversion regarding each of the input multiple images and generating multiple images having different resolutions;

a searching unit for seeking correspondence between the images obtained from different viewpoints using low-resolution images and reconstructing low-resolution three-dimensional data;

a fitting unit for fitting a standard model to the reconstructed low-resolution three-dimensional data;

a unit for projecting the specific areas specified in said standard model to an image having a higher resolution than said image based on the result of the fitting;

a correspondence seeking unit for seeking correspondence between the images obtained from different viewpoints using the high-resolution image regarding the areas projected on the higher-resolution image and reconstructing high-resolution three-dimensional data; and

a replacing device for replacing the low-resolution three-dimensional data regarding said specific areas with high-resolution three-dimensional data.

13. A method for generating a three-dimensional data set, the method comprising:

acquiring a first original data set and a second original data set, the first original data set and the second original data set respectively representing first and

second original images, each of the first and second original images being obtained by imaging a same object from differing observation points;

converting the first original data set and the second original data set to a first low resolution data set and a second low resolution data set, respectively; and

generating a three-dimensional data set using the first original data set and the second original data set and the first low resolution data set and the second low resolution data set;

wherein the three-dimensional data set comprises a first part and a second part, the first part is generated using the first original data set and the second original data set, and the second part is generated using the first low resolution data set and the second low resolution data set.

14. The method of claim 13, further comprising:

extracting a first partial image from the first original image; and

seeking points corresponding to points in the first partial image within the second original image;

wherein the first part of the three-dimensional data set is generated by the sought corresponding points.

15. The method of claim 13, wherein the generating step includes:

producing three-dimensional position data using the first low resolution data set and the second low resolution data set; and

fitting a standard model to the produced three-dimensional position data to generate the three-dimensional data set.

16. The method of claim 15, further comprising:

projecting high-precision areas of the standard model onto the first original image and extracting the projected areas as a first partial image; and

seeking points corresponding to points in the first partial image within the second original image;

wherein the first part of the three-dimensional data set is generated by the sought corresponding points.

17. The method of claim 13, further comprising extracting high precision areas from the first original data set, wherein the first part of the three-dimensional data set comprises the extracted high precision areas.

18. A method of generating three-dimensional data, comprising the steps of:  
inputting multiple images having a first resolution from different viewpoints of an object;  
performing a resolution conversion of each of the input multiple images to generate converted images having a second resolution that is different than the first resolution;  
detecting characteristic areas of the object from at least one of the input multiple images; and  
constructing three-dimensional data by using data from the input images for the characteristic areas of the object and by using data from the converted images for remaining areas of the object.

19. The method of claim 18, wherein the first resolution is higher than the second resolution.

20. The method of claim 18, further comprising the steps of combining and storing the three-dimensional data.

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